

# Finding Patterns in the Multiplication Table

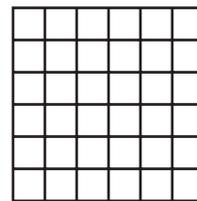
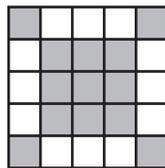
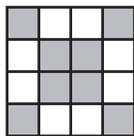
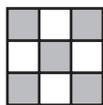
1 Complete the table.

×	0	1	2	3	4	5	6	7	8	9	10
6							36				
7								49			
8									64		
9										81	
10											100
11											
12											



## Test Prep

2 Notice the pattern of the squares that are shaded in the designs below.



How many squares would be shaded in Design 4?  
Explain how you know.

\_\_\_\_\_

\_\_\_\_\_

# Splitting Area Models

Complete the area models and puzzles.

**1**

	10	6
4	40	

×	10	6	16
4			

**2**

	5
8	
7	

×	5
8	
7	
15	

**3**

×	7
6	
9	
15	

**4**

×	10	8	18
11			

**5**

×	2	4	6
3			
5			
8			

**6**

×	4	6	10
7			
10			
17			



## Test Prep

**7** Which is NOT a way to describe a  $13 \times 14$  area model?

- |  |  |
|--|--|
| <p>A. <math>(10 + 3) \times (10 + 4)</math></p> <p>B. <math>(5 + 8) \times (6 + 8)</math></p> <p>C. <math>(10 \times 3) + (10 \times 4)</math></p> | <p>D. <math>(12 + 1) \times (13 + 1)</math></p> <p>E. <math>(13 \times 9) + (13 \times 5)</math></p> |
|--|--|

# Doubling and Adding

Fill in the columns by adding or doubling.

1

×	39
1	39
2	
3	
4	
5	
6	
7	
8	
9	
10	

2

×	39
11	
12	
13	
14	546
15	
16	624
17	
18	702
19	
20	

Complete.

3  $1 \times 39 = 39$ , so  $10 \times 39 =$  \_\_\_\_\_

4  $2 \times 39 =$  \_\_\_\_\_, so  $20 \times 39 =$  \_\_\_\_\_



## Test Prep

- 5 An adult takes 180 breaths in 15 minutes and a baby takes 300. How many more breaths than an adult will a baby take in one hour? Explain how you know.

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# Multiplying by Multiples of 10

Complete the puzzles.

1	×	50	40	90
6				
10				
16				

2	×	60	5	
20				
30				
50				

Complete the number sentences.

3  $9 \times 5 = \underline{\hspace{2cm}}$

$90 \times 5 = \underline{\hspace{2cm}}$

$50 \times 9 = \underline{\hspace{2cm}}$

$90 \times 50 = \underline{\hspace{2cm}}$

4  $5 \times 2 = \underline{\hspace{2cm}}$

$20 \times 5 = \underline{\hspace{2cm}}$

$50 \times 2 = \underline{\hspace{2cm}}$

$20 \times 50 = \underline{\hspace{2cm}}$



## Test Prep

- 5 Marco had 1,400 baseball cards and 50 football cards in his collection. After selling some cards to his brother, he had 1,274 cards left. How many cards did he sell to his brother? Explain how you solved the problem.

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# Working with Large Numbers

Write numbers to match the words.

- ① Twelve million, forty-nine thousand, nine hundred two

\_\_\_\_\_

- ② Two hundred fourteen billion, five hundred million, seven hundred seventeen thousand, twelve

\_\_\_\_\_

- ③ Six hundred eight million, eight

\_\_\_\_\_

- ④ Compare the numbers and order them from **least to greatest** by writing **1, 2, or 3** in the boxes.

29,642,831,076

29,642,813,076

29,624,831,760



## Test Prep

- ⑤ Which expression does NOT have a value equal to 2,000?

- A.  $100 \times 10 \times 2$
- B.  $50 \times 400$
- C.  $20 \times 100$
- D.  $40 \times 50$

- ⑥ Which shows another way to write 10,000?

- A.  $10 \times 10 \times 10$
- B.  $100 \times 10$
- C.  $100 \times 100$
- D.  $1 \times 100 \times 10$

# Estimating Products

Complete the number sentences.

1  $200 \times 9 =$  \_\_\_\_\_

$200 \times 90 =$  \_\_\_\_\_

$200 \times 900 =$  \_\_\_\_\_

2  $4 \times 800 =$  \_\_\_\_\_

$40 \times 800 =$  \_\_\_\_\_

$400 \times 800 =$  \_\_\_\_\_

3  $60 \times 40 =$  \_\_\_\_\_

$600 \times 400 =$  \_\_\_\_\_

$60 \times 400 =$  \_\_\_\_\_

4  $7 \times 60 =$  \_\_\_\_\_

$70 \times 600 =$  \_\_\_\_\_

$70 \times 60 =$  \_\_\_\_\_

Solve the problem.

- 5 Fifty students each spend about 300 hours a year studying and doing homework. About how many hours per year do they spend altogether?

\_\_\_\_\_



## Test Prep

- 6 A large bag of potato chips costs \$0.75 more than a small bag. If ■ represents the price of the large bag, which expression shows the price of a small bag?

A. ■ - \$0.75

B. \$0.75 - ■

C. ■ + \$0.75

D. \$0.75 + ■

# Estimating in Various Ways

Estimate the products.

1  $16 \times 46$

Estimate:

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

2  $34 \times 29$

Estimate:

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

3  $31 \times 24$

Estimate:

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

4  $55 \times 78$

Estimate:

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_



- 5 Natalee wants to buy 24 cupcakes at tomorrow's bake sale. She knows that each cupcake will cost 32¢. How much money should she bring to be sure she has enough money? Show your work and explain your answer.

Estimate:

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Test Prep

- 6 Which list shows the common factors of 12 and 30?

A. 1, 2, 3, 4, 5, 6, 10, 12, 15, 30  
B. 2, 4, 6, 10, 12  
C. 1, 3, 5, 15  
D. 1, 2, 3, 6

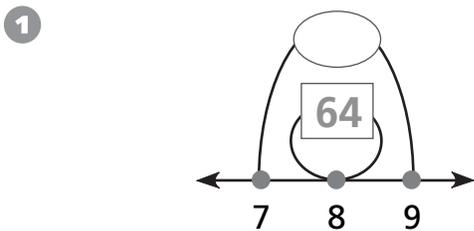
- 7 Which pair of signs would make this sentence true?

$$12 \bullet 1 = 12 \bullet 1$$

A. +, -  
B. -,  $\times$   
C. >, <  
D.  $\times$ ,  $\div$

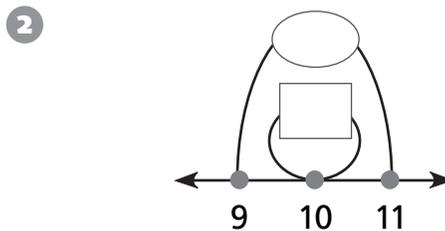
# Discovering a Useful Multiplication Pattern

Complete the diagrams and number sentences.



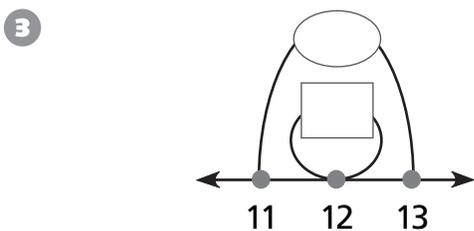
$$8 \times 8 = \underline{\hspace{2cm}}$$

$$7 \times 9 = \underline{\hspace{2cm}}$$



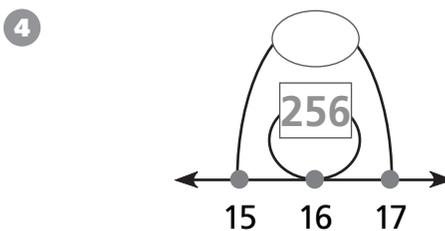
$$10 \times 10 = \underline{\hspace{2cm}}$$

$$9 \times 11 = \underline{\hspace{2cm}}$$



$$12 \times 12 = \underline{\hspace{2cm}}$$

$$11 \times 13 = \underline{\hspace{2cm}}$$



$$16 \times 16 = \underline{\hspace{2cm}}$$

$$15 \times 17 = \underline{\hspace{2cm}}$$



## Test Prep

- 5 Jake makes \$21 each day he works. He plans to work 112 days this year. At the end of the year, will he have earned the \$2,000 he wants to save for a trip to visit his grandmother? Estimate to solve and explain your answer.

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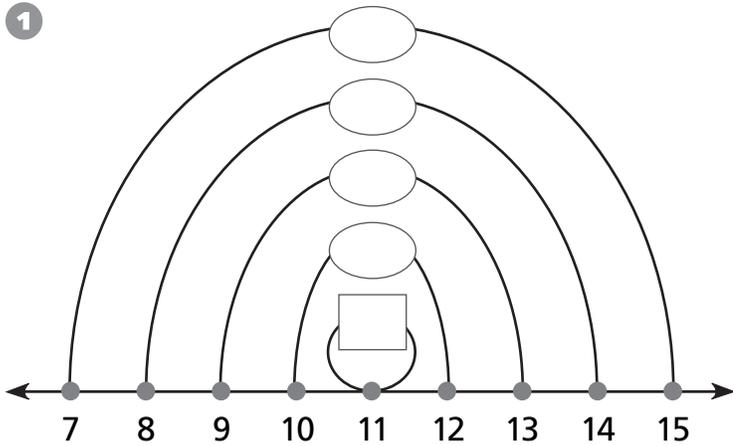
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# Extending the Multiplication Pattern

Complete the diagram and tables.



Steps Away	$11 \times 11 = \underline{\hspace{2cm}}$
1	$10 \times 12 = \underline{\hspace{2cm}}$
2	$\underline{\hspace{1cm}} \times 13 = \underline{\hspace{2cm}}$
3	$8 \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
4	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

2

Steps Away	$7 \times 7 = \underline{\hspace{2cm}}$
3	$4 \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

3

Steps Away	$19 \times 19 = 361$
2	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$



## Test Prep

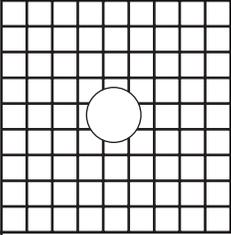
- 4 A certain number is multiplied by 3. The product is 8 less than 35.  
What is the number?
- A. 8                      C. 7  
B. 5                      D. 9

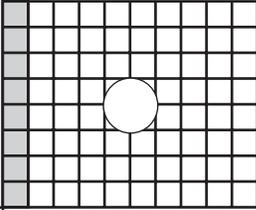
- 5 A certain odd number is less than 10. If it is multiplied by 6, and 6 is added to the product, the result is 60.  
What is the number?
- A. 9                      C. 7  
B. 5                      D. 3

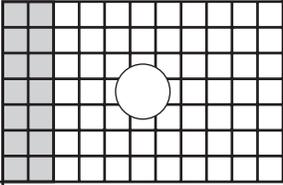
# Investigating Why the Pattern Works

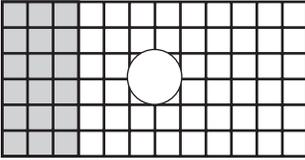
Fill in the missing numbers.

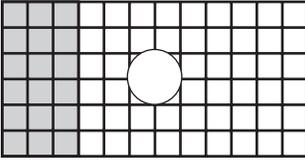
**1**

$(9 \times 9) - 1$    $9 \times 9$   9

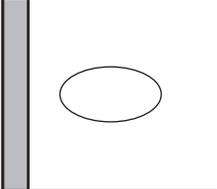
$(9 \times 9) - 1$    $9$   8

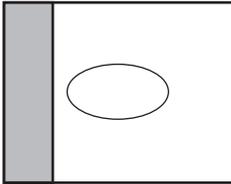
$(9 \times 9) - \bigcirc$    $10$   7

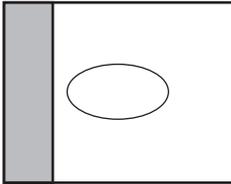
$(9 \times 9) - \bigcirc$    $11$   6

$12$  

**2**

$(16 \times 16) - 1$    $16 \times 16$   16

$(16 \times 16) - 4$    16





## Test Prep

**B** An eagle beats its wings 150 times in a minute. A hummingbird beats its wings 30 times as fast as an eagle. How many times does a hummingbird beat its wings in one minute? Explain how you know?

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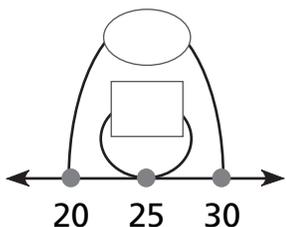


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# Finding Products of Large Factors

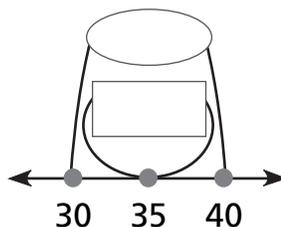
Fill in the missing numbers.

1



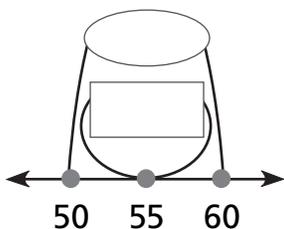
$(20 \times 30) + 25 = \underline{\hspace{2cm}}$

2



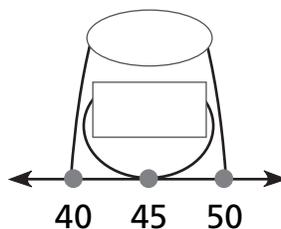
$(30 \times 40) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

3



$(\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

4



$(\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$



## Test Prep

- 5 Which group contains a number that is NOT a square number?
- A. 121, 11, 25, 4
  - B. 16, 49, 1, 144
  - C. 36, 16, 0, 4
  - D. 100, 49, 9, 25

- 6 Which group of words correctly describes the number 25?
- A. multiple of 5, multiple of 20
  - B. odd, multiple of 10
  - C. prime, square, odd
  - D. odd, square, composite